Figure 6. Briefly stated, the valve body is designated by 120, the relief opening is denoted by 121, the throat tube and associated parts are indicated by 122, the flanged opening to the atmosphere by 123, the frame rods by 124 and 125, the guide by 126, the adjusting ring for the guide by 127, the locking nut for the adjusting ring by 128, the studs by 129, the nuts for the studs by 130 and 131, the piston by 132, the spindle by 133, the spring by 134, the sleeve for the spring by 135, the pressure or adjusting screw by 136, the cross-rod by 137, the bonnet by 138, the operating lever by 139, the deflector plate by 140 and the valve disk by 141. The reference numeral 142 indicates an adjustable indicator that may be used to indicate the lift of the valve. The numeral 143 designates the exhaust chamber, 144 and 145 denote two of the exhaust ports, and 146 denotes a metering valve for one of the ports 144. The other port instead of being provided with a metering valve is in alinement with a tube 147 which may be formed integrally with the body of the valve. The port 145 may be one of the two ports that are not normally provided with metering valves, in which case the tube 147 would be at right angles to metering valve 146 instead of being opposite thereto as shown. The tube 147 may advantageously be provided with a flange 148 so that the tube 147 may be readily connected with a second tube 149 leading to the operating lever of a pilot-actuated valve. For this purpose, the second tube 149 may also be provided with a flange 150. Instead of the illustrated flanged connections, screwed connections may be used, if so desired, as the pressure developed in the actuating line is rather low.

Any of the embodiments of the invention that have been described as well as any conventional form of safety valve may be modified in construction so as to be actuated by the jet of steam issuing from the exhaust port of the pilot valve of Figure 11. It is merely necessary to provide the valve to be actuated by the pilot valve with means actuated by the jet of steam to raise the operating lever and hence the valve disk independently of the pressure below the valve disk.

In Figure 12 is illustrated a form of valve similar to the valve of Figure 6 modified in construction to adapt it for use as a pilot-actuated valve. The valve body is indicated by 151, the relief opening by 152, the flanged opening to the atmosphere by 153, the throat tube assembly by 154, the guide by 155, the adjusting ring for the guide by 156, the deflector plate by 157, the valve disk by 158, the piston by 159, the spindle by 160, the spring by 161, the sleeve for the spring by 162, the spring washer by 163, the pressure or adjusting screw by 164, the nozzle ring for the throat tube by 165, the locking screw for the nozzle ring by 166, the exhaust belt by 167, the exhaust ports by 168 and the metering valves by 169. All of the foregoing elements are substantially of the same construction as the corresponding elements shown in Figure 6.

In Figure 12, the numeral 170 denotes a modified form of cross-bar or yoke provided with an extension 171 for supporting the cylinder 172. The cylinder has a reduced upper portion 173 which fits snugly in an aperture provided in the extension, a part of 173 extending above the aperture and being provided with screw threads to receive a nut 174 to secure the cylinder in position. The numeral 175 denotes a lock nut of suitable construction provided with a key in the form of a cotter pin 176.

Mounted for vertical slidable movement within the cylinder 172 is a piston 177 provided with a vertical pin 178, which projects above the lock nut 175 and is normally in contact with the undersurface of the operating lever 179. The lever may be provided with a cam surface 180 as shown to coact with the pin 178. The lever is fulcrumed at 181 in the bonnet 182 of the valve and contacts the lower surface of a nut 183, which is threadedly connected to the upper reduced end of the spindle 160. The nut 183 may be locked in position by means of a suitable form of lock nut 184.

The piston 177 may advantageously be of the construction illustrated in Figure 12. As there shown, the piston has a wide lower portion 185 fitting snugly in the central portion of the cylinder, and a narrow upper portion 186 fitting snugly in the reduced upper portion of the cylinder. The lower portion of the piston may be hollowed out as at 187 to reduce the weight of the piston and may also be provided about its outer periphery with a number of annular grooves 188 and 189 and with a number of serrations 190. The narrow upper portion of the piston may be provided with a series of peripheral serrations 191 and with a number of vertical slots 192. The purpose of the annular grooves and serrations in the piston is to form a labyrinth packing as in the case of the guide and piston of the valves. The slots 192 permit air and steam to escape from the cylinder when the piston rises to prevent the pressure within the cylinder from building up.

The bottom of the cylinder 172 is closed by means of a plate 193. Between the piston 177 and the bottom plate 193 is provided a vertical cylindrical screen 194 for a purpose which will appear as the description proceeds. As shown, the bottom of the cylinder is provided at one side with an opening 195 for connection to the actuating line 149 from the pilot valve. Steam entering the cylinder 172 through the aperture 195 must pass through the screen, and hence any dirt that may be in the steam is kept out of the cylinder.

It is to be noted that the above described construction renders it possible to rotate the cross-bar or yoke 170 with the frame rods (not shown) as much as 180° to meet piping requirements.

It will be understood from the foregoing description that when the pilot valve pops, there will issue from the exhaust port 145 a jet of high velocity steam which will flow through the tubes 147 and 149 to the cylinder 172 of the pilot-actuated valve, and that this jet of steam will raise the piston 177 and the pin 178 against the cam surface 180 on the undersurface of the lever 179, thereby raising the valve disk 158 independently of the pressure under the valve disk. When the pilot valve closes, the flow of steam from the exhaust chamber ceases. The piston 177 then drops and the valve disk 158 is caused to return to its seat. It is to be noted that the valve disk 158 cannot seat itself before the pilot valve closes, due to the fact that the steam in the actuating line tends to expand. It is also to be noted that in case the pilot valve for some reason fails to function, the pilot-actuated valve will nevertheless operate to relieve excess pressure that may be built up under the valve disk 158.

As has been stated, the valves of Figures 6 and

12 are shown provided with a novel form of gag to be used when testing the valves. Referring to Figure 13 of the drawings, it will be noted that the gag, which is indicated generally by the numeral **200**, has a body portion in the form of a threaded rod **201** which terminates in a pointed lower end **202**. The rod **201** is shown provided at its upper portion with a flat fingerhold **203**.

The gag of the present invention is adapted to be used either with the conventional form of valve bonnet as shown in Figure 12 or with a special form of bonnet as shown in Figure 6. To adapt the conventional form of bonnet for use with the gag of the invention, it is merely necessary to provide a threaded aperture **204** in the top of the bonnet in alinement with the valve stem or spindle. This aperture can very easily be made while the bonnet is being machined. When the gag is not being used, the aperture may be closed by means of a suitable form of plug. (See numeral **43** in Figure 1).

The special form of bonnet is indicated in Figure 6 by the numeral **205**. As illustrated the bonnet is adapted to be substituted for the conventional bonnet and lever of the valve, and is provided at its top with a threaded aperture **206** in direct alinement with the valve stem or spindle. The bonnet **205** may be secured to the cross-bar **95** by means of the screws **207** and **208**.

To use the gag of the invention, it is merely necessary to insert the threaded body portion **201** through the threaded aperture in the top of the bonnet and to turn the gag by means of the fingerhold **203** to bring the pointed lower end **202** into a suitably formed aperture in the upper end of the spindle. No wrenches are required, it being merely necessary to tighten the gag by means of the fingers.

It will be understood from the foregoing description that the gag of the invention is very simple and inexpensive in construction, and that it affords a very effective way of gagging a valve for test purposes. The load is carried centrally of the valve stem or spindle and is so distributed that the lower pointed end **202** serves merely to guide the gag into the recess in the top of the stem or spindle. There is no tendency to bend the stem or spindle as when the cumbersome gag of the prior art is used.

In Figure 14, I have illustrated a suitable form of fluid system embodying several valves made in accordance with the teachings of the present invention. Referring to said figure of the drawings, the numeral **250** indicates the drum of a steam generating boiler, **251** are the coils of a superheater, **252** is a suitable connection between the drum **250** and the superheater coils, **253** is the superheater outlet line, and **254** is a suitable connection between the superheater **251** and the superheater outlet line **253**.

The letter A designates a pilot valve on the drum, B is a pilot-actuated valve on the superheater outlet line, C is a second drum valve which, however, is not a pilot valve, and D is a second superheater outlet valve, which may or may not be a pilot-actuated valve.

The valve A may be of the construction shown in Figure 11, and the valve B may be of the construction illustrated in Figure 12. Valves C and D may be of the constructions shown in Figures 1 to 6 inclusive. Neither valves A, B nor C are provided with bimetallic strips or clips. Valve D may be provided with the bimetallic elements, unless it is pilot-actuated.

The numeral **255** designates the actuating line from the exhaust belt of the pilot valve A to the cylinder **256** of the pilot-actuated valve B. This cylinder contains a piston (not shown) provided with a pin **257** which is in contact with the underside of the operating lever **258**. In case valve D is also to be pilot actuated, it should also be provided with a cylinder and piston as well as with a connection to actuating line **255**.

The numeral E denotes a gate valve connected to the drum **250** by means of a line **259** and to the actuating line **255** of the pilot-actuated valve B by means of the line **260**. The gate valve may be provided with suitable mechanical or electrical operating means and may be located in any convenient position, as for instance in the boiler room convenient to the chief engineer.

In the illustrative embodiment of the system shown in Figure 14, the pilot valve A may have a capacity of 8,000 pounds of steam per hour, a popping pressure of 610 pounds and a blow-down of 18 pounds; the pilot-actuated valve B may have a capacity of 45,000 pounds of steam per hour, a popping pressure of about 610 pounds and a blow-down of 18 pounds; valve C may have a capacity of 55,000 pounds of steam per hour, a popping pressure of 616 pounds and a blow-down of 18 pounds; and valve D may have a capacity of 38,000 pounds of steam per hour, a popping pressure of 618 pounds and a blow-down of 18 pounds.

It is thought that the operation of the system will be readily understood from the foregoing description. Suffice it to say, that if the system is operating normally and a heavy draft of steam is being taken from the outlet line, the pressure in the system will remain below the popping pressure and all of the valves will remain shut. Should, however, the call for steam cease, there will be a rapid build-up of pressure in both the superheater and in the saturated drum. Due to the normal drop in pressure between the drum and the superheater, the pilot valve A will normally pop first (i.e., as soon as the pressure under the valve disk in pilot valve A reaches 610 pounds). A small jet of steam from the exhaust belt of valve A will then be carried by the actuating line **255** to the cylinder **256** of pilot-actuated valve B, and the lever **258** thereof will be raised by the piston and valve B will also pop. If the popping of valves A and B does not relieve the pressure in the line sufficiently, then valve C will pop, and if the pressure is still not reduced sufficiently, valve D will also go. As soon as the pressure below the valve disk of the pilot valve drops by an amount equal to the blow-down, valve A will return to its seat, and valve B will follow. It is to be noted that valve B cannot seat before valve A due to the expansion of steam in the actuating line. In the illustrative system the lag between the closing of valves A and B is about ⅗ of a second. Valves C and D will close about the same time as valve B.

In case valve A for any reason fails to pop, valve B will nevertheless pop as soon as the popping pressure is reached below its valve disk. In case of an emergency, the chief engineer can readily open the gate valve E, thereby causing valve B to pop irrespective of the line pressure, and preventing the burning out of the superheater coils.

The gate valve E may, if desired, be connected to any one or more of the other valves in the system, so that the chief engineer may blow the connected valves at any time he considers such action necessary. It will be understood that each

safety valve to be connected to the gate valve should be provided with a cylinder and a piston as in the case of valve B.

From the foregoing description it will be seen that I have provided a valve of relatively simple construction, particularly adapted for service as a safety valve for pressure as high as 3000 pounds per square inch and temperatures as high as 1000° F., which may be readily adapted for use either as a pilot or pilot-actuated valve, which operates smoothly, sharply and without dirling, flutter, simmering (warn), chatter or seat drumming, which rises instantaneously to its full lift without any accumulation of pressure (overpressure), which closes abruptly at a relatively small drop in pressure below that at which the valve is set to pop, which always pops at substantially the same pressure, which is provided with means to regulate the blow-down, and with means to maintain the blow-down at the same value for both saturated and superheated steam, in which distortion of the valve disk and the valve seat is practically eliminated, in which the tearing action between the valve seat and the disk is reduced to a minimum, in which leakage between the seat ring and the body wall resulting from variable expansion and contraction is practically eliminated, in which the loading spring is protected from the fluid and from sudden and great changes of temperature as well as from the danger of overloading, in which undue stresses in the body or base of the valve are eliminated as well as the compressive strain on the throat tube, in which the throat tube and the valve body are protected from entrapped moisture and in which the collection of foreign materials tending to set up local centers for electrolytic action is eliminated.

In conclusion, it may be stated that various other modifications of the invention may be made, and that it is therefore to be understood that the invention is not to be considered as being limited by the specific examples herein given as illustrative of the invention, except as may be necessitated by the state of the prior art.

This application is a continuation in part of application Serial No. 31,011, filed July 12, 1935.

I claim:

1. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a piston slidably mounted within said valve body in alinement with said relief opening and extending to the atmosphere, a valve disk carried by said piston in position normally to be seated against said valve seat, the body of said valve adjacent said relief opening being provided with an annular recess and with one or more apertures communicating with said recess, said piston being adapted to uncover said recess, said piston being provided with a serrated outer surface to form a labyrinth type of packing between said piston and the body of said valve, and adjustable means for controlling said apertures.

2. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a cylindrical guide open to the atmosphere and extending into said body in substantial alinement with said relief opening, a cylindrical piston slidably mounted within said guide, a valve disk carried by said piston in position normally to be seated on said valve seat, said guide being provided near its lower end with an annular recess constituting an exhaust chamber and with one or more apertures in constant communication with said recess, said recess being adapted to be covered and uncovered by said piston in its slidable movement, and means for controlling said apertures.

3. In a safety valve, a valve body open at its top and provided with a flat annular seat, a cylindrical guide provided with an annular flange, said guide extending into said valve body and being suspended by its flange from said annular seat, a cup-shaped piston having a length substantially equal to that of the guide slidably mounted within said guide, said piston being provided with a recess in its bottom, a spindle extending through said piston into said recess, a valve disk mounted within said recess and carried by the lower end of said spindle, a spring washer mounted on said spindle above said valve body, a flanged sleeve freely suspended from said spindle below said spring washer, a loading spring coiled about said sleeve and confined between said washer and the flange of said sleeve, a throat tube in said valve body provided at its upper periphery with a valve seat, said valve disk being adapted to be seated normally on said valve seat.

4. A safety valve of the type described, comprising a valve body, a throat tube in said valve body provided at its upper periphery with a valve seat, a guide mounted in said valve body above said valve seat in fixed relation thereto, said guide being provided near one end with an annular recess forming an exhaust chamber and with one or more apertures in constant communication with said exhaust chamber, adjustable means to control said apertures, a piston slidably mounted within said guide and adapted to uncover said exhaust chamber, and a valve disk carried by said piston in position normally to be seated on said valve seat.

5. In a safety valve, a valve body open at its top and provided with a flat annular seat, a guide provided with an annular flange, said guide extending into said valve body and being suspended by its flange from said annular seat, said guide being provided near one end with an annular recess forming an exhaust chamber and with one or more apertures communicating with said exhaust chamber, adjustable means to control said apertures, a piston slidably mounted within said guide and adapted to uncover said exhaust chamber, a throat tube in said valve body below said piston, said throat tube being provided about its upper periphery with a valve seat, and a valve disk carried by said piston in position normally to be seated on said valve seat.

6. As a subcombination of a safety valve, a cylindrical guide, said guide being provided near one end with an annular recess forming an exhaust chamber and with one or more apertures constituting exhaust ports communicating with said recess or exhaust chamber, bimetallic strips associated with said exhaust ports for automatically closing said exhaust ports at a predetermined temperature, a cylindrical valve disk carrier mounted for slidable movement within said cylindrical guide and being movable to uncover said recess or exhaust chamber, and a valve disk carried by said carrier.

7. As a subcombination of a safety valve, a cylindrical guide, said guide being provided near

one end with an annular recess forming an exhaust chamber and with one or more apertures constituting exhaust ports communicating with said recess or exhaust chamber, adjustable means for controlling said exhaust ports, bimetallic strips associated with said exhaust ports for automatically closing said exhaust ports at a predetermined temperature, a cylindrical valve disk carrier mounted for slidable movement within said cylindrical guide and being movable to uncover said recess or exhaust chamber, and a valve disk carried by said carrier.

8. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a piston slidably mounted within said valve body in alinement with said relief opening, a valve disk carried by said piston in position normally to be seated against said valve seat, the body of said valve adjacent said relief opening being provided with an annular recess forming an exhaust chamber and with one or more apertures constituting exhaust ports communicating with said recess or exhaust chamber, bimetallic strips associated with said exhaust ports to automatically close said exhaust ports at a predetermined temperature, said piston being adapted to cover and uncover said recess or exhaust chamber in its slidable movement.

9. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a piston slidably mounted within said valve body in alinement with said relief opening, a valve disk carried by said piston in position normally to be seated against said valve seat, the body of said valve adjacent said relief opening being provided with an annular recess forming an exhaust chamber and with one or more apertures constituting exhaust ports communicating with said recess or exhaust chamber, adjustable means for controlling said exhaust ports, bimetallic strips associated with said exhaust ports to automatically close said exhaust ports at a predetermined temperature, said piston being adapted to cover and uncover said recess or exhaust chamber in its slidable movement.

10. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a cylindrical guide disposed within said body in substantial alinement with said relief opening, a cylindrical piston slidably mounted within said guide, and a valve disk carried by said piston in position normally to be seated on said valve seat, said guide being provided near its lower end with an annular recess constituting an exhaust chamber, said recess being adapted to be covered and uncovered by said piston in its slidable movement, and the outer circumferential wall of said recess being provided with a plurality of exhaust ports, said recess and said exhaust ports being in constant communication.

11. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a cylindrical guide disposed within said body in substantial alinement with said relief opening, a cylindrical piston slidably mounted within said guide, a valve disk carried by said piston in position normally to be seated on said valve seat, said guide being provided near its lower end with an annular recess constituting an exhaust chamber, said recess being adapted to be covered and uncovered by said piston in its slidable movement, and the outer circumferential wall of said recess being provided with a plurality of exhaust ports, and means for closing said exhaust ports at a predetermined temperature.

12. As a subcombination of a safety valve, a valve body open at its top and provided with a flat annular seat, a cylindrical guide provided with an annular flange, an adjusting ring clamping the flange of said cylindrical guide and being supported by said annular seat, said cylindrical guide extending into said valve body and being suspended by its flange from the adjusting ring, a piston slidably mounted within said guide, and a valve disk carried by said piston.

13. As a subcombination of a safety valve, a cylindrical guide, said guide being provided on its inner periphery near one end with an annular recess forming an exhaust chamber, said guide being provided on its outer periphery with one or more apertures in constant communication with said annular recess, adjustable means for controlling said apertures, a cylindrical piston mounted within said cylindrical guide, the outer periphery of said piston normally covering said annular recess, and said piston being adapted to be moved to uncover said annular recess, and a valve disk carried by said piston.

14. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a tubular guide in substantial alinement with the relief opening, said guide being provided on its inner periphery at the end adjacent said relief opening with an annular recess forming an exhaust chamber, said guide being provided on its outer periphery with one or more apertures in constant communication with said annular recess, a piston mounted within said guide, the outer periphery of said piston normally covering said annular recess, and said piston being adapted to be moved to uncover said annular recess, and a valve disk carried by said piston and being normally seated against said valve seat, and when thus seated being disposed between said relief opening and said annular recess.

15. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a tubular guide in substantial alinement with the relief opening, said guide being provided on its inner periphery at the end adjacent said relief opening with an annular recess forming an exhaust chamber, said annular recess being provided with one or more apertures communicating with the outer periphery of said guide, a piston mounted within said guide, and extending to the atmosphere, the outer periphery of said piston normally covering said annular recess, and said piston being adapted to be moved to uncover said annular recess, and a valve disk carried by said piston and being normally seated against said valve seat, and when

thus seated being disposed between said relief opening and said annular recess.

16. A safety valve of the type described, comprising a valve body provided with a relief opening for connection with a tank adapted to contain fluid under pressure, said opening being provided about its periphery with an annular valve seat, a tubular guide in substantial alinement with the relief opening, said guide being provided on its inner periphery at the end adjacent said relief opening with an annular recess forming an exhaust chamber, said annular recess being provided with one or more apertures communicating with the outer periphery of said guide, a piston mounted within said guide, said piston being provided with a serrated outer surface, the outer periphery of said piston normally covering said annular recess, and said piston being adapted to be moved to uncover said annular recess, and a valve disk carried by said piston and being normally seated against said valve seat, and when thus seated being disposed between said relief opening and said annular recess.

17. The safety valve defined in claim 14, one or more of the apertures in said annular recess being provided with metering valves to control the amount of steam escaping from said annular recess.

PERRY H. GENTZEL.

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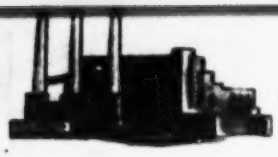
In the 267 new  **central station units being started in 40 different states during the 1953-56 period, 75% of the**

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IN THE

Supreme Court of the United States

OCTOBER TERM, 1956

No. 270

PERRY H. GENTZEL AND FOSTER ENGINEERING COMPANY,

Petitioner,

vs.

MANNING, MAXWELL & MOORE, INC.,

Respondent.

RESPONDENT'S BRIEF IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

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August, 1956.

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IN THE

Supreme Court of the United States

October Term, 1956

PERRY H. GENTZEL and FOSTER ENGINEERING COMPANY, *Petitioners,* *vs.* MANNING, MAXWELL & MOORE, INC., *Respondent.*	No. 270

RESPONDENT'S BRIEF IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

I. Opinions Below.

The opinion of the United States Court of Appeals for the Second Circuit is reported, *Gentzel* v. *Manning, Maxwell & Moore*, 2 Cir., 230 F. 2d 341. The opinion of the district court is not reported but is annexed to the petition as Appendix B.

II. Jurisdiction.

The jurisdiction of this Court is invoked pursuant to the provisions of 28 USCA, Sec. 2101 and 35 USC, Sec. 281. The opinion and judgment of the Court of Appeals is dated March 1, 1956, a petition for rehearing was filed by the plaintiffs below, petitioners here and was denied on April 27, 1956, and the present petition was filed in this Court on June 21, 1956.

II. Questions Presented.

This is an ordinary action for alleged patent infringement. The Court below decided that the patent claims in suit were invalid for want of patentable invention, citing opinions of this Court. The other defenses were not passed upon, the Court saying "Since both patents are invalid so far as in issue before us, we do not reach the defendant's further contentions that the claims in the reissue patent 22,164 are unduly vague or that it did not infringe either patent" (p. 345). These were substantial defenses, and they would, we believe, have been sustained if the Court below had considered them.

There is no conflict between circuits. No other suit has been brought on the patents so far as the record shows or we know. The petition refers to "the absence of conflicting circuit decisions" (p. 36).

There is no question of public importance. The patents in suit, according to the petition and also the record (and as far as we know) have never been claimed by petitioners to have been used by any except the plaintiffs, petitioners here, and by defendant, respondent here. The petition states that "plaintiff and defendant are the sole competitors of the subject valve" (p. 33) and that "the petitioner is the only competitor of the respondent" (p. 35).

The complaint here of petitioners is that the Court of Appeals was wrong, and the trial court right, concerning whether the patent claims met the standards of patentable invention established by the patent statutes and court decisions. That is not sufficient reason for this Court to grant the petition and take the case, even if the Court of Appeals erred (it did not).

Keller v. *Adams-Campbell Company*, 264 U. S. 314, 319:

> "Such an ordinary patent case, with the usual issues of invention, breadth of claims, and non-

> infringement, this Court will not bring here by certiorari unless it be necessary to reconcile decisions of Circuit Courts of Appeal on the same patent."

Magnum Import Co. v. *Coty*, 262 U. S. 159, 163:

> "The jurisdiction to bring up cases by certiorari from the Circuit Courts of Appeals was given for two purposes; first, to secure uniformity of decision between those courts in the nine circuits; and, second, to bring up cases involving questions of importance which it is in the public interest to have decided by this court of last resort. The jurisdiction was not conferred upon this court merely to give the defeated party in the Circuit Court of Appeals another hearing."

This Court does not "sit for the benefit of the particular litigants," *Rice* v. *Sioux City*, 349 U. S. 70, 74.

IV. Statement of Case and Argument

Petitioner (plaintiff) Gentzel is the patentee of the two patents, petitioner (plaintiff) Foster Engineering is his manufacturing licensee, and respondent (defendant) Manning is also a manufacturer.

The patents are "combination" patents, which should be scrutinized "with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements," *A. & P. Tea Co.* v. *Supermarket Corp.*, 340 U. S. 147, 152.

The controlling question concerning validity of the patents was essentially a matter of law, because it involved only a comparison of the patents in suit with the prior patents, there being no conflict in the evidence concerning their disclosures. The appellate court had the right to disagree with even the findings of fact by a trial court where "clearly erroneous". As stated by this Court in

United States v. *United States Gypsum*, 333 U. S. 364, 395, "A finding is 'clearly erroneous' when although there is evidence to support it, the reviewing court on the entire evidence is left with a definite and firm conviction that a mistake has been committed". The Court below followed this decision in *Orvis* v. *Higgins*, 2 Cir., 180 F. 2d 537, saying that this Court "pointed out that a trial judge's finding does not have the dignity which jury verdicts derive from the Constitution nor the dignity which some statutes confer on findings of some administrative agencies" (p. 539).

The Court below was not required to accept the trial court's inferences and opinion concerning the patentability of the patent claims in issue.

A. Gentzel reissue patent 22,164.

This patent issued August 25, 1942, upon reissue application filed July 24, 1940, the original patent 2,145,870 issuing February 7, 1939 upon application filed January 30, 1935. All six claims are in suit.

The safety valve of this patent, and all the safety valves in the case, have a valve disk seated on the outlet nozzle from a boiler. Excess steam pressure will lift the valve disk from its seat, against a compression spring, and upon the pressure being reduced by escaping steam, the spring returns the disk to its seat.

There are many different types of such valves, as evidenced by the two patents in suit, the prior patents, and defendant's alleged infringing valves, no two being the same in all respects. Naturally, different operating conditions of boiler temperatures, pressures and capacities, costs of material, etc. require differences in engineering design, within the ordinary skill of the industry.

The Gentzel reissue patent relates to the way that the spring cross-rod is connected to the valve body, namely, by

frame rods. Prior to the Gentzel patent, two methods, frame rods and yokes, were employed, and are still employed, illustrated by defendant's Type 1419 valve and defendant's Type 1700 (Maxiflow) valve (plff's.' Ex. 16, pp. 12, 38).

In the Type 1419 valve, and in the old Crosby valves (plff's. Exs. 33, 34 and 35), the spring cross-rod is carried by two short rods resting on the top of the valve body, which is called a "yoke" type valve. The Gentzel reissue patent, and defendant's alleged infringing Maxiflow valves, use frame rods to carry the spring cross-rod, and the frame rods are anchored at or near the bottom of the valve body.

The frame rod type of valve was old, as shown by the prior patents of Paine 102,147, McCarty 944,809 and Jackson British 3,172. Accordingly, the patent claims are not broadly for use of frame rods, because that was old. Instead, the claims are narrow and limited to specific characteristics which the Court of Appeals found non-inventive. Claim 1 is typical:

> "1. A valve mechanism suitable for high temperature operation having *in combination** a valve casing provided with a fluid inlet port, a fluid outlet port, a valve seat between said ports,"

This is an ordinary valve.

> "and arms extended laterally from said valve casing near said fluid inlet port,"

The arms must be "near." Defendant does not have such "arms", but like Paine, McCarty and Jackson, anchors its frame rods on the valve casing.

> "a valve cooperating with said valve seat, a rod cooperating with said valve, a cross member located beyond said valve casing for supporting said rod,"

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*Emphasis added.

That is the ordinary valve.

> "supporting rods for said cross member connected with said laterally extended arms,"

The "supporting rods" are the frame rods, and old in Paine, McCarty and Jackson, which, like defendant, do not connect them to "arms".

> "said valve and valve seat being enclosed within said valve casing to prevent heated fluid from striking the supporting rods when the valve is open,"

This was old in McCarty and Jackson.

> "said supporting rods being spaced laterally a substantial distance from the valve casing."

The "substantial distance" is any distance such that the frame rods will not become too hot during operation. This depends upon the temperatures at which the valve is operated, the materials and sizes of the different valve parts, etc., etc., and is a matter of trial and error with any valve. This was also old, because inherent in any useful valve.

> "and of such length as to diminish the transfer of heat from the relatively hot part of the valve casing to said cross member, and thereby maintain relatively cool said cross member and the valve rod supported thereby".

The "length" is equally indefinite, adding nothing to existing knowledge that the frame rods should not be too short.

As grounds for this Court taking the case, the petition complains of the "Court of Appeals' Misconception and Misconstruction of Inventive Concept in Reissue Patent" (p. 9), and of the "Court of Appeals' Misconstruction of the Applicability of the Prior Art to the Reissue Patent" (p. 11.) But, even if there were misconceptions and misconstructions of patents in this case (there were not), the matter is not of public importance.

The petition says that the Court of Appeals erroneously "concluded that the basic conception of the Reissue patent is to prevent undesirable heating of the frame rods," and that this "basic conception" was instead "the *attachment* of the *lower ends* of the *frame rods* to the *casing below the valve seat*"* (p. 10). But that Court did not overlook this "attachment", its opinion (p. 343) referring to the Gentzel frame rods having the feature of "securing the bottom of the frame rods to the valve casing at its end nearest the boiler." The opinion also says "Thus plaintiff Gentzel's claimed invention consists of the positioning, place of attachment, and length of the frame rods"; and specifically refers to the frame rods attachment of the prior Paine, Jackson and McCarty patents.

As for the alleged misconception by the Court of Appeals of the prior art, the petition merely says that the Court below was wrong in its opinion that, in view of the various teachings of the prior patents, there was no patentable invention in the reissue patent's assembly of old elements. Obviously, this is a question of law, based on the respective patents, which that Court was at least as well qualified to decide as was the trial judge.

The Court of Appeals was right in holding that there was nothing worthy of a seventeen year patent monopoly in this description of what was at most only good engineering practice.

B. Gentzel patent 2,278,437.

Gentzel patent 2,278,437 issued April 7, 1942 on an application filed July 31, 1939. Eleven of its 17 claims are in issue.

When the valve disk lifts from its seat because of excessive steam pressure under the disk, the steam pressure

*Emphasis in petition.

immediately reduces because of escape to the atmosphere. The disk will return to its seat, forced by the compression spring, when the pressure is sufficiently reduced, this return being called "blowdown".

The primary outlet of the steam to the atmosphere is between the valve seat and the lifted valve disk. The amount and rate of the lift of the valve, and also its "blowdown", can be regulated by suitably proportioning the steam outlet passage from the boiler, ("jet" action), the size and shape of the valve disk and other contours externally adjoining the seat ("huddling" or "reaction" chamber). These features of valve design were old before this Gentzel patent, as it states (pat., p. 1, col. 1, l. 24 to col. 2, l. 20).

The alleged invention of this Gentzel patent is a specific construction of a secondary outlet for the steam, through exhaust holes to the atmosphere, the area of the holes being variable to control the amount of steam flowing through them. Such supplemental holes, for the same purpose, were old in the prior patents of Coale 459,268 and Houser 1,152,753, as pointed out by the Court of Appeals. The Gentzel structure differed, in having an exhaust belt (groove) into which the steam flows before passing through the exhaust holes, communicating with the groove, to atmosphere (defendant does not have an exhaust belt). The differences between the specific structures of Gentzel, Coale and Houser are, as correctly stated by the Court below (p. 345) "matters of engineering one, rather than invention", saying: "So we find this patent, like the other, to add at most only a slight refinement by rearrangement or repositioning of old elements to obtain a quicker or more uniform operation of the device. We do not see invention here."

The petition asserts that the Court of Appeals misconstrued the "Function of Valve of Patent 2,278,437" (p. 23), saying that "The Court of Appeals' evaluation of the function of the exhaust belt is inaccurate * * *" (p. 24).

But that Court correctly said that the exhaust belt was for "breaking down jet action and dispersing the steam so as to minimize blowdown" (p. 345), which is what the Gentzel patent itself states (p. 4, col. 1, ll. 30-43; p. 7, col. 1, ll. 8-20) and is what Gentzel testified (J.A. 95).

Incidentally, it may be observed that the petition is wrong in saying that the entry of steam into the exhaust belt with its holes open to the atmosphere "assists in raising the valve to its maximum opening or lift" (p. 25). The exhaust belt with its holes can only reduce the steam pressure which causes the lift.

The Court of Appeals was right in not finding patentable invention in this Gentzel patent.

C. The lengthy patent office prosecutions.

The petition (p. 30 et seq.) complains of the Court of Appeals reference (p. 345) to

> "the tortuous progress of these patents through the Patent Office from 1935 to 1942 and the many emendations of statement, especially in the second patent, made to meet the objections of examiners—a classic example of what Judge Learned Hand has called 'the ant-like persistency of solicitors' which overcomes 'the patience of examiners, and there is apparently always but one outcome.'"

The Court mentioned this "tortuous passage" only as "Of at least equal persuasiveness" to plaintiff's claim of commercial success, and the petition is wrong in saying "The Court's conclusion that a lengthy prosecution is necessarily persuasive of non-invention" (p. 31). The Court did not so conclude, and it was right, in the particular cases of the two patents in suit, in referring to the difficulties of obtaining allowance of any claims.

And the petition is also wrong in saying that "Lengthy prosecution in the Patent Office means simply that the Patent Examiner * * * had concluded that the subject matter

claimed was patentable over the references" and that "in his opinion as an expert the subject matter is clearly patentable" (p. 31). The law at the time of the prosecution of the Gentzel applications was, as then vigorously argued by Gentzel's patent attorney in the prosecution of the July 12, 1935 application, that "every reasonable doubt must be resolved in favor of an applicant" (file history, deft's. Ex. I, p. 71). This was stated in *In re Meyer*, CCPA, 123 F. 2d 1021, 1023 (1941) and *In re de Groote*, CCPA 127 F. 2d 322, 324 (1942), following *In re Thomson*, 26 App. D. C. 419, 425; 120 O. G. 2756 (1906):

> "In case of ordinary doubt, the policy of the patent system, as customarily maintained in the Patent Office, has been to give the applicant the benefit thereof, because no absolute right of property is conferred by the grant of a patent. (Ex. parte Fanshawe, C. D. 1891, 203). The patentee is merely put in a position to assert his *prima facie* right against infringers who may, in their defense, raise the question of the validity of the patent, and have the same finally adjudicated in the light of a full presentation and consideration of all the evidence attainable in respect of anticipation, prior knowledge, use, and the like."

In the present case, there is no evidence that the patent examiner or the patent office thought the claims were patentable, instead of being merely exhausted by the long and "tortuous" arguments referred to by the Court below, which apparently prevailed, because the patent was allowed.

Incidentally, the Court of Appeals was right in referring to the period from 1935 to 1942 for the prosecution of both patents, and the petition is wrong in suggesting (p. 30) that the prosecution of the second patent commenced only with the filing of a 1939 application. The patent itself states that its 1939 application is "a continuation in part of application Serial No. 31,011, filed July 12, 1935" (p. 10,

col 1, ll. 46, 47), and ten of the claims in the 1939 application as filed were taken verbatim from the 1935 application after having been strenuously prosecuted there (file history, deft's. Ex. J, p. 56). Patent claim 1 in suit was one of those claims, as were also, with slight modification, patent claims 2, 4 and 5 in suit.

D. The Court of Appeals was right concerning commercial success.

The petition (p. 32) relies, as in the Court below, upon commercial success, which that Court considered, declaring (p. 345) that "even a greater measure of success would not establish validity in the face of the clear showing here of anticipation by the prior art. *Jungersen* v. *Ostby & Barton Co.*, 335 U. S. 560, 567, affirming *Jungersen* v. *Baden*, 2 Cir., 166 F. 2d 807, 811."

CONCLUSION

This is an ordinary patent case, with no conflict of circuits, no error by the Court of Appeals complained of except misapplications of well established principles of law to specific facts, and of no general importance. Petitioners have failed to sustain their burden of establishing error in the Court below, and there was no error. The petition should be denied.

Respectfully submitted,

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